



## Scientists Issue Sanctuary Report Card

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"The waters of the Florida Keys National Marine Sanctuary are a living laboratory; they contain one of the most intensively studied coral reef ecosystems in the world. It is our responsibility to communicate the knowledge we've gained and show others how to make successful strides in marine conservation," stated Dan Basta, National Marine Sanctuaries Program Director, in his opening remarks to the 200 attendees at the FKNMS science symposium held in Washington D.C. this past December.

The symposium, entitled "The Florida Keys National Marine Sanctuary: An ecosystem report card," was held immediately after the most recent Coral Reef Task Force meeting, making it possible for interested parties from the Task Force to attend. "The purpose of holding the symposium in the Washington area was to reach beyond the scientific community and share what has been learned in the Florida Keys with ecosystem managers, politicians, and others involved in coral reef management around the world," commented Billy Causey, Florida Keys National Marine Sanctuary Superintendent.

FKNMS Science Coordinator Brian Keller added that "The goal for the day was to review and evaluate the progress made in long-term Sanctuary-wide monitoring projects, including those that compare fully protected zones with reference sites open to fishing and collecting. We also heard updates on groundwater research and NOAA research partnerships."

Key partners offered brief comments before the morning science sessions began. Fred McManus of the U.S. Environmental Protection Agency noted that the EPA has been funding long-term and special projects in the Keys since 1994. Under the Water Quality Protection Program launched by the EPA, water quality parameters, coral reef communities, and seagrasses have been measured at fixed locations throughout the Sanctuary. This information forms the baseline data needed to evaluate status and trends of water quality and key marine communities, and will be especially useful as restoration of the Everglades takes place just north of the Sanctuary.

Ken Haddad of the Florida Marine Research Institute reiterated the value of partnerships and stated that science forms the basis for all sound management decisions and should be given a high priority. Florida Department of Environmental Protection's representative, Paula Allen, noted that without the promise of research and monitoring to track the expected changes, the establishment of fully protected zones throughout the Sanctuary would not have taken place. Zone monitoring projects form a major part of the Sanctuary science program and are essential in evaluating the effectiveness of "no-take" zones as a management tool.

To provide the necessary background information needed to understand marine communities of the Keys, U.S. Geological Survey Geologist Gene Shinn summarized the geology and hydrology of the porous limestone rock that makes up the Keys, and NOAA's Elizabeth Johns explained what is known about surface water circulation, currents that are critical for the recruitment of marine larvae into the ecosystem.



**At the science symposium, USGS Geologist Gene Shinn demonstrated the porosity of Key Largo limestone by pouring water through a limestone rock.**

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## Science Symposium

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Shinn and Johns were followed by investigators reporting on long-term Water Quality Protection Program projects that monitor water quality, seagrasses, and coral reefs throughout the Sanctuary and results from special studies conducted about sewage and groundwater contamination.

Several investigators from the Sanctuary's Zone Monitoring Program reported on the effects of the fully protected zones on reef condition, fish communities, and spiny lobsters. Four years of monitoring the fully protected zones indicates that some heavily exploited species, such as the spiny lobster, have increased in abundance and size within the zones compared to fished reference sites.

The final session included talks on data management, socioeconomic research, long-range transport of diseases by African dust, biomarkers of stress in corals, the ecology of bottom habitats in the Tortugas, habitat characterization, and seagrass restoration. In his closing remarks, Bill Kruczynski of the EPA, summarized the major findings that were reported. To learn more about these results, research projects and Sanctuary management, see *Symposium Results* and visit the Sanctuary's website where project summaries have been compiled in the **Sanctuary Monitoring Report 2000**, available at: [http://www.fknms.nos.noaa.gov/research\\_monitoring/welcome.html](http://www.fknms.nos.noaa.gov/research_monitoring/welcome.html).

*Note: This article appeared in the Spring 2002 issue of the newsletter of the Florida Keys National Marine Sanctuary, **Sounding Line**. For more information, visit: [floridakeys.noaa.gov](http://floridakeys.noaa.gov).*

## Symposium Results

- \* Geology and topography control the distribution of coral reefs and the movement, flow direction, and seepage of groundwater.
- \* Sewage contaminates groundwater in areas of the Keys.
- \* Surface circulation patterns are complex and exhibit a high potential for larval retention within the Sanctuary.
- \* Declines in coral cover were probably associated with extreme events: 1997-98 severe bleaching, Hurricane Georges.
- \* Many reefs have only about 5-10% live coral cover; generally, higher coral cover occurs in the Dry Tortugas and nearshore patch reefs along the Keys.
- \* Seagrasses appear to have remained stable in distribution & abundance except for losses due to erosion or burial associated with hurricanes.
- \* Most species of commercially caught reef fishes are highly overexploited; some have shown positive responses to full protection.
- \* Dust from Africa carries nutrients, pesticides, heavy metals, viable microbes, and fungus spores from dust may infect sea fans.
- \* A cellular diagnostic system can aid in determining whether coral stressors are local or larger scale and can be used to predict coral health conditions, e.g., bleaching.
- \* Larvae from the Tortugas region may settle along the western and eastern coasts of Florida and in the Keys.
- \* Seagrass and algal production on bottom habitats around Tortugas coral reefs appear to contribute significantly to fish production.
- \* Improved methods of habitat characterization and a seagrass recovery model are improving our capacity to assess and restore damaged beds.
- \* Socioeconomic monitoring indicates that zone usage is highly seasonal and that compliance with "no-take" regulations is relatively high.
- \* Commercial fishermen displaced from the Western Sambo Ecological Reserve have not suffered short-term financial losses.